

WHAT IS CLAIMED IS:

1. A magnetic recording medium comprising

a non-magnetic substrate having thereon a non-magnetic underlayer,

a magnetic recording layer comprising a Co alloy represented
5 by the formula: $a\text{Co}b\text{Cr}c\text{Pt}dTae\text{Zr}f\text{Cu}h\text{B}j\text{Ru}$, wherein b is from 8 to 26 at%, c is 20 at% or less, d is 7 at% or less, e is 4 at% or less, f is 3 at% or less, h is from 1 to 20 at%, j is 20 at% or less, and a is the balance,

a soft magnetic layer and

10 a protective layer,

wherein the coercivity is 2,500 Oe or more, and the thickness of the soft magnetic layer is from 5 to 50 Å.

2. A magnetic recording medium as claimed in claim 1,

wherein the magnetic layer comprises two or more magnetic layers and an average composition formula of the magnetic layer is represented by the formula: $a\text{Co}b\text{Cr}c\text{Pt}dTae\text{Zr}f\text{Cu}h\text{B}j\text{Ru}$, wherein b is
5 from 8 to 26 at%, c is 20 at% or less, d is 7 at% or less, e is 4 at% or less, f is 3 at% or less, h is from 1 to 20 at%, j is 20 at% or less, and a is the balance.

3. A magnetic recording medium comprising

a non-magnetic substrate having thereon a non-magnetic under layer,

a magnetic recording layer,

5 a soft magnetic layer and
a protective layer,
wherein the coercivity is 2,500 Oe or more, and the thickness
of the soft magnetic layer is from 5 to 50 Å,

10 wherein a non-magnetic intermediate layer comprising a Co
alloy represented by the formula: $a\text{Co}b\text{Cr}c\text{Pt}d\text{TaeZrfCuhB}$, wherein b
is from 25 to 50 at%, c is 10 at% or less, d is 10 at% or less, e
is 5 at% or less, f is 5 at% or less, h is 10 at% or less, and a is
the balance is present immediately under the magnetic recording
layer.

4. A magnetic recording medium comprising
a non-magnetic substrate having thereon a non-magnetic
underlayer,

a magnetic recording layer,
5 a soft magnetic layer and
a protective layer
wherein the coercivity is 2,500 Oe or more, and the thickness
of the soft magnetic layer is from 5 to 50 Å,

10 wherein a non-magnetic underlayer having a thickness of 100
to 300 Å comprises a layer of a material containing NiAl.

5. A magnetic recording medium comprising
a non-magnetic substrate having thereon a non-magnetic under
layer,
a magnetic recording layer,

5 a soft magnetic layer and
a protective layer,
wherein the coercivity is 2,500 Oe or more, and the thickness
of the soft magnetic layer is from 5 to 50 Å,
wherein a non-magnetic underlayer having a thickness of 100
10 to 300 Å comprises a layer of a material containing Cr and one or
more elements selected from the group consisting of Mo, W, V, Ti
and Nb.

6. The magnetic recording medium as claimed in any one
of claims 1 to 5, wherein an amount of extracted Ni from the
substrate is 0.08 ng/cm² or less based on unit area of the
substrate.

7. The magnetic recording medium as claimed in any one
of claims 1 to 5, wherein the soft magnetic layer has a maximum
magnetic permeability of from 1,000 to 1,000,000.

8. The magnetic recording medium as claimed in claim 1 or
2, wherein a non-magnetic intermediate layer comprising a Co alloy
represented by the formula: aCobCrcPtdTaeZrfCuhB, wherein b is
from 25 to 50 at %, c is 10 at % or less, d is 10 at % or less, e
5 is 5 at % or less, f is 5 at % or less, h is 10 at % or less, and a
is the balance is present immediately under the magnetic recording

layer.

9. The magnetic recording medium as claimed in any one of claims 1 to 3, wherein a non-magnetic underlayer having a thickness of 100 to 300 Å comprises a layer of a material containing NiAl.

10. The magnetic recording medium as claimed in any one of claims 1 to 3, wherein a non-magnetic underlayer having a thickness of 100 to 300 Å comprises a layer of a material containing Cr and one or more elements selected from the group consisting of Mo, W, V, Ti and Nb.

11. The magnetic recording medium as claimed as claim 8, wherein a non-magnetic underlayer having a thickness of 100 to 300 Å comprises a layer of a material containing NiAl.

12. The magnetic recording medium as claimed as claim 8, wherein a non-magnetic underlayer having a thickness of 100 to 300 Å comprises a layer of a material containing Cr and one or more elements selected from the group consisting of Mo, W, V, Ti and Nb.

13. The magnetic recording medium as claimed in claim 1, wherein b is from 16 to 22 at %, c if from 6 to 10 at %, d is from

1 to 3 at %, e is 2 at % or less, f is 2 at % or less, g is 8 at % or less and a is the balance.

14. A head employing a reproducing device making use of a magnetoresistive effect in combination with the magnetic recording medium as claimed in any one of claims 1 to 5 and 8.

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